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Improving Access to Cancer Care for the Rural Community with Telehealth

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Walden University

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Cheryl Ann Fiscelli

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Walden University

2019

Abstract

Improving Access to Cancer Care for the Rural Community with Telehealth

by

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MS, Walden University, 2014

BS, Madonna University, 1991

Project Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Nursing Practice

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May 2019

Abstract

After a diagnosis of cancer, timely access to oncology care is a priority. For patients living in a rural community, there are many challenges such as proximity to cancer care, reduced access to state-of-the art therapies, lack of coordinated care, and limited access to clinical trials. A multidisciplinary consultation (MDC) via telehealth can improve access to care for rural oncology patients. The purpose of this project was to determine the effects of telehealth MDC on the time in days from diagnosis to the first treatment with the goal of persuading the project site to implement a telehealth MDC. The data involved a comparison of 2 rural locations, 1 with telehealth MDC and 1 without. Data from 36 oncology patients were compared using time in days from the initial diagnosis to the first oncology treatment. The patients who received the initial consultation with telehealth MDC had an average timeframe of 19 days from diagnoses to first treatment, whereas those without telehealth MDC had an average of 51 days, meaning there was a statistically significant difference ($z = -5.811, p < .0001$). The data will be presented to leadership at the project site to provide the rationale to implement telehealth MDC. This project can lead to a positive social change for rural oncology patients by encouraging telehealth MDC, which may address the several identified barriers that affect access for oncology patients by improving access to clinical trials, coordination of care, and nursing education to rural community patients at the project site.

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Dedication

My DNP QI development project is dedicated to all the patients living in rural areas to improve access to advanced cancer care.

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I would like to thank my husband for always providing support with my academic and career goals. I would like to thank Dr. Niedz for all of her knowledge, wisdom, and support with my DNP QI development project. Dr. Spencer, who provided mentorship through the DNP QI development project. Thank you to the oncology executive leadership team, the executive director, and the medical director for their assistance and support with the development of the telehealth process to allow our rural communities access to advance cancer care.

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Section 1: Nature of the Project

Introduction

Rural communities present a unique challenge to providing access to health care; cancer patients in these communities may have to travel far to a cancer center, which can delay consultation and treatment. In the United States in 2016, the estimated population was 323,127,513 with 14% of the population living in rural areas. There are 4,862 hospitals in the United States and 27% identified as a critical access hospital (<https://www.ruralhealthinfo.org/states/united-states>). In the United States, there are multiple barriers to quality health care including accessibility, utilization, efficiency, the effectiveness of healthcare, and cost (Dyk, 2014). For the oncology patient living in a rural community, there are additional challenges to cancer care like lack of proximity to cancer care, reduced access to state-of-the-art therapies, and limited or no access to clinical trials (Gruca, Nam, & Tracy, 2014).

Problem Statement

Multiple problems have been identified that inhibit rural oncology patients from receiving quality cancer care such as a lack of patient education, limited coordination of care, increased time to treatment, and a lack of access to cancer care. Lack of knowledge for the rural oncology patient can cause a gap in care, especially regarding knowledge of the National Comprehensive Cancer Network guidelines, system management, available clinical trials, and chemotherapy and radiation protocols. Nursing plays a significant role in patient education for oncology patients, so this deficit represents a gap in practice. Nurses provide early education regarding treatment options, testing, and follow-up care

after treatment. Patients are interested in receiving education that facilitates understanding their cancer and helps them to make decisions as well as cope with treatments, side effects, prognosis, and follow-up care (Matsuyama, Kuhn, Molisani, & Wilson-Genderson, 2013).

In addition to issues with lack of knowledge, lack of coordinated care for the rural patient can cause delays in the initiation of treatment. In metropolitan settings, the patient may be able to see the primary care provider on a Monday, the oncologist on Tuesday, radiation oncologist on Wednesday, and the surgeon on Thursday, ensuring that treatment begins in a timely manner. However, in rural settings, this process is affected by time and distance. Coordination of care represents a significant problem and for the rural patient it becomes critical. With the delay in having to see all the different oncology disciplines, the time to the initial consultation may be delayed, delaying the time from diagnoses to initiation of treatment. Thus, this doctor of nursing improvement (DNP QI) project was developed to improve two key outcomes for this patient population: (a) reducing time from diagnoses to initiation of treatment and (b) improving patient and family's perception of their satisfaction with the experience of care.

This project is significant for nursing by providing patient education with the use of telehealth to assist the patient in understanding the information that has been given by the providers. There has been growing interest in oncology regarding telehealth with a goal of reducing the disparities in access to oncology patients between rural and metropolitan areas (Doyle-Lindrud, 2016). Telehealth has been found to have many benefits for the rural population and for the oncology patient the use of telehealth

provides a new dimension of care. The benefits for the rural oncology patient include increased access to quality cancer care, the advantage of a multidisciplinary consultation (MDC) and team, access to clinical trials, access to the supervision of chemotherapy, symptom management, patient education, reduced cost, and reduced time from diagnosis to initiation of treatment (Doyle-Lindrud, 2016). The benefits for the oncology patient are the key reasons that health system that includes the project site has selected to develop relationships with rural community providers to offer the cancer centers services via a telehealth MDC. According to the health systems web site, the cancer center is this Midwest state's only National Cancer Institute-designated Comprehensive Cancer Center, one of only 47 in the nation.

Having a cancer center with groundbreaking research and clinical trials in but not having access because of location would not be patient-centered care, which is why the Midwest State Cancer Center (MSCC) has determined a need for a telehealth MDC for the rural oncology population. A prominent benefit of the use of telehealth is that patients can begin treatment and avoid delays, which for a patient with cancer can be a significant obstacle to potential remission and even to cure (Kozak, Khorana, Amarnath, Glass, & Kalady, 2017). MDC aims to facilitate the delivery and coordination of care for diseases that require a multimodal approach, reduces time to treatment, improves treatment efficiency, and access to care (Kozak et al., 2017). A telehealth MDC care conference early in the patient's care trajectory addresses two important gaps in care: knowledge deficits and care coordination.

Purpose

Meaningful gaps in practice have been identified in rural sites like knowledge deficits and poor care coordination, which led to the purpose of this DNP project—develop a MDC telehealth process for patients at the project site. This project will assist in increasing access to the state’s only National Cancer Institute-designated cancer center for rural cancer patients by developing a MDC conference via telehealth technology for future implementation by the project site. The goal of this process is to reduce the time to see all oncology disciplines and to reduce the time from diagnosis to the initiation of treatment. For the cancer patient, receiving timely care is central to high-quality care, and delays in care may lead to advanced disease and subsequently reduced length of life (Paul et al., 2011). The guiding practice focused question was: Does the telehealth MDC reduce the time from diagnosis to treatment initiation in rural area cancer patients and improve patient satisfaction? The prevalence of an MDC for the delivery of cancer care is increasing with evidence of the benefits to patients and healthcare professions (Lamb, Jalil, Sevdalis, Vincent, & Green, 2014). Research has indicated that MDC had been associated with a change in staging/diagnosis, initial management plans, higher rates of treatment, shorter time to treatment after diagnosis, and adherence to clinical guidelines (Pillay et al., 2016).

This DNP QI development project addresses the practice gaps in cancer care coordination and timely delivery of treatment by developing a process for a telehealth MDC in conjunction with a rural community hospital located in the north central part of the state, the project site. The project site has just been acquired by the MSCC. The

project site consists of two general medical oncologists, one oncology nurse navigator (ONN), who is also the director of the oncology program, two infusion nurses, a nurse practitioner (NP), and two clinic nurses. The project site has a general surgeon, not a surgical oncologist, and does not have a radiation oncologist or the ability to provide radiation therapy.

Nature of the Doctoral Project

Telehealth is a potentially cost-effective alternative that accelerates time to treatment and is patient centered. With the rapid development of communication technologies, in addition to the increasing pressure to develop more efficient healthcare delivery models, attention has been drawn to telehealth to support care from a distance and improve access (Alder-Milstein, Devdar, & Bates, 2014). The overall goal of this project is to improve access for the rural oncology patient. The use of a MDC has provided nursing the opportunity to coordinate care, provide cancer education, and improve patient satisfaction. This project included the development of a telehealth MDC process at the project site to allow the rural patient to receive the benefit of the MDC at the MSCC. The MDC will provide access to information for the oncology providers in the project site that include current clinical trials that patients may be eligible for, an oncology intergraded electronic health record, and National Comprehensive Cancer Network guidelines to provide quality, evidenced-based care.

An MDC team at the rural comparison nonproject site within the same health system was used for comparison with the project site that lacks the MDC team. The rural comparison nonproject site within the same health system was used for comparison

because the nonproject site includes a similar population to the rural oncology patient population of the project site. The nonproject site MDC team consists of a registered clinic nurse, ONN, physicians for each discipline, medical, surgical and radiation oncology, a mid-level provider, and supportive services. The members of the team rely on the cancer diagnosis and needs of the patient to develop the treatment plan. The MDC team uses a case-by-case approach. Patient information including pathology, radiology scans, and history is reviewed at the nonproject site disease specific tumor board.

The MSCC outpatient clinic nursing staff and the ONN will share oncology policies, protocols, National Comprehensive Cancer Network guidelines and best practice to the project site ONN and oncology clinic nurses in the rural area to enhance knowledge in caring for the oncology patient. The MSCC nurses will also provide education to the rural patient regarding supportive services and how they can assist during and after treatment. The MSCC ONN will reach out to the new patient to provide diagnoses and education regarding treatment to the rural patient at the time of initial contact and during the MDC (see Figure 1). The ONN has disease-specific knowledge necessary to provide patient-centered care through the cancer continuum to promote positive patient outcomes and experience (McMullen, 2013). The ONN also has a positive impact on the patient and the cancer team by providing improved communication, removes barriers and facilitates timely access to quality health and psychosocial care (McMullen, 2013).

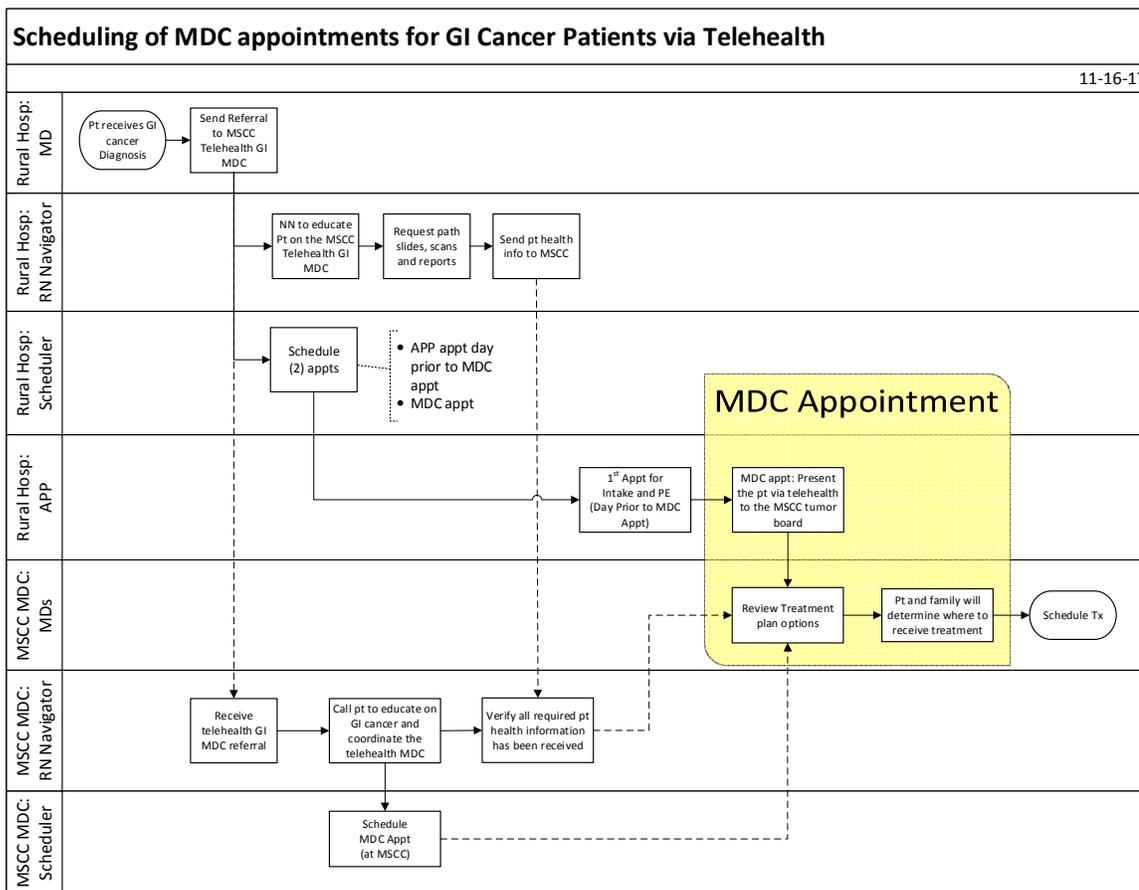


Figure 1. Telehealth appointment scheduling.

Significance

The guiding DNP QI development project question was “Does a telehealth MDC reduce the time from diagnosis to treatment initiation in rural area cancer patients and improve patient satisfaction?” The purpose of this project was the development of a QI initiative telehealth MDC program that will be implemented at the project site later. The telehealth MDC may reduce the time to an initial consultation by helping rural patients see all three disciplines at one time versus each discipline separately at different times and locations. The rural patient will also receive cancer education from both the MSCC ONN, the MSCC clinic nurse, and the rural community project site nurse. All will provide the rural patient quick access, quality cancer care at a National Cancer Institute-designated cancer center via telehealth.

Identified stakeholders from the MSCC include the medical director, executive director, MDC disease specific team, medical oncologist, radiation oncologist, surgical oncologist, NP, clinical nurse and the ONN. The identified stakeholders from the health system organization include the chief operating officer, the director of telehealth and the telehealth project manager. The identified stakeholders from the project site include the chief medical officer, oncology medical director, the medical oncologists, NP, ONN and clinic nurses.

Potential contributions of the doctoral project have been to allow the MSCC oncology nurse the opportunity to share knowledge of current practice, safety initiatives, clinical trials, system wide oncology patient education materials, and the use of the National Comprehensive Cancer Network guidelines to provide patient education. For

the project site, the oncology nurse can provide knowledge of the needs of the rural patient and community. Both nurses, the MSCC ONN and the project site clinic nurse, will assist in improving patient satisfaction by increasing access, coordination of care, and providing patient education for the rural oncology patient.

Patient satisfaction was measured using the current patient satisfaction measures between the project site rural comparison nonproject site locations using the question that addresses how soon an appointment is scheduled as needed. After the implementation of the telehealth MDC at the project site, two questions pertaining to the patient's telehealth experience will be included. In addition to understanding patient satisfaction, it is important to understand provider and staff satisfaction, especially regarding whether the MDC telehealth process allows for quality patient care. After implementation of the telehealth MDC at the project site, not included in the scope of this project, the goal of the cancer center is to expand the MDC to all disease sites that include gastrointestinal, neurologic oncology, lung, breast, melanoma, head and neck, and sarcoma. The recommendations from the providers involved in the telehealth MDC will include future expansion of the program.

The potential implications for social change for this project include providing advanced cancer care to a rural community that would otherwise not have access to the services. Additionally, encouraging a process like a MDC can allow rural community patients a second opinion of recommended treatment and to learn about the options of clinical trials. Another implication of this project is improving access by reducing the time from diagnosis, to initial consultation, and the initiation of treatment. Last, this

project may help develop a relationship with the MSCC and the rural community project site to provide quality cancer care.

Summary

The telehealth MDC is a new concept to both the cancer center and the rural community project site. The new practice change will include using a change theory to introduce the new practice and evidence-based practice to assist in building the platform for the needed change. Providing the telehealth MDC to the rural oncology patient will assist in improving access to quality cancer care. Section 2 will provide a thorough overview of the existing literature that supports the QI development project.

Section 2: Background and Context

Introduction

After a cancer diagnosis, access to cancer care and treatment initiation without delay may ensure improved patient outcomes. Delays in care may lead to advanced disease and subsequently reduced the length of life (Paul et al., 2011). Residing in a rural area leads to these potential delays, as patients may lack access to a cancer center or to disease-specific cancer care. The practice-focused question for this project is “Does the telehealth MDC reduce the time from diagnosis to treatment initiation and improve patient satisfaction in rural area cancer patients?” The purpose of this project was the development of a QI initiative telehealth MDC program that will be later implemented at the project site.

Concepts, Models, and Theories

Concepts, models, and theories are used as guidelines for the implementation of science into practice. Concepts may be abstract or concrete and when operationalized, concepts are the variables used in hypotheses for research testing (McEwen & Wills, 2014). Concept analysis is used to examine the meaning of a concept to promote understanding (McEwen & Wills, 2014). A model involves simplification or a specific aspect of a phenomenon and may not be an accurate representation of reality to have value (Nilsen, 2015). Models and theories are closely related, though a model is descriptive, whereas a theory is explanatory and descriptive (Nilsen, 2015). A theory is a set of analytical principles designed to structure observations, understanding, and explanation of the world, to provide a clear explanation of how and why specific

relationship lead to specific events (Nilsen, 2015). Theories help describe abstraction continuum that includes high, middle and lower abstraction level abstraction. High abstraction has an unlimited scope, middle explains limited sets of phenomena, and lower are empirical generalizations of limited scope and application (Nilsen, 2015).

Kotter's Change Theory

Kotter's change theory will assist the organization involving the project site to adapt to change and a culture of learning. Kotter's change model is a well-known approach to organizational change with the wisdom for leading change and the most successful formula for change management (Pollack & Pollack, 2015). Successful implementation of change can be a determinant of an organization's short- and long-term success with research suggesting that failed organizational change initiatives are as high as 80% of attempted change efforts (Appelbaum, Habashy, Malo, & Shafiq, 2012). Kotter's model consists of eight steps to change and transform the organization. Kotter's eight steps begins with creating a sense of urgency and why the change is needed followed by creating a guiding coalition—a group with influence that can lead the change (Appelbaum et al., 2012). Next, the group needs to develop a vision and strategy for why the change is needed and how to implement the change (Appelbaum et al., 2012). Step 4 is to communicate the change vision in every possible way, at every opportunity, telling people about *the why*, *the what*, and *the how* about the change (Appelbaum et al., 2012). After completing the first few steps, it is important to empower a broad-based action, to involve people, and to have people think about the change and how to achieve it rather than disagreeing with the change and thinking about how to stop it (Appelbaum et al.,

2012). Recognizing the work being done toward achieving the change creates momentum for change to build on successes and develop people as change agents (Appelbaum et al., 2012). The final step in Kotter's change theory is to anchor new approaches in the corporate culture, which is critical to long-term success to institutionalizing the changes (Appelbaum et al., 2012). Kotter's model fit the purpose of this project, as this project was focused on changes that can improve access for rural oncology patients to reduce the time from the initial diagnoses to the initiation of treatment and to provide access to the MSCC without traveling over 200 miles for the initial oncology MDC.

The Iowa Model

Evidence-based practice improves quality care and patient outcomes. The evidence-based practice models assist nurses and healthcare providers to integrate the best evidence into clinical practice. One model is the Iowa model of evidence-based practice to promote quality care and implement practice change at the unit or organization level (Brown, 2014). The first step in the Iowa model is to identify a problem-focused trigger or a knowledge-focused trigger where an evidence-based practice change is needed (Brown, 2014). Next is for the nurse or team to determine whether the problem is a priority for the organization, department, or unit and once the priority has been determined. Following this is creating a team consisting of members the will assist to develop, evaluate, and implement the evidence-based practice change (Brown, 2014). After the team is created, the next step is to gather and critique pertinent research related to the practice change and to critique the available studies to determine

the study with the tested intervention that is scientifically sound (Brown, 2014). Then the team decides whether sufficient research exists to implement a practice change, and the final step is to implement the intervention into a pilot practice change while watching for any deviation in practice or a decrease in the outcomes (Brown, 2014). For nursing, implementation of interventions in their practice should be based on the highest levels of evidence to improve the patient experience and patient outcomes. The evidence relevant to the MDC change in practice is summarized in a literature matrix for this study (see Appendix A).

Telehealth

The rural population has many challenges to receive quality healthcare. Once the patient is introduced to the diagnoses of cancer, there may be limited options. After the diagnoses, the patient may consult only with an internal medicine provider or a general surgeon, and there may not be a radiation treatment center nearby or a radiation oncologist available. With the rapid development of new communication technologies and the pressure to develop more-efficient healthcare delivery models, telehealth provides new opportunities (Alder-Milstein et al., 2014). There are many potential applications of telehealth for the rural population like video visits that are designed to communicate using technologies to support care from a distance (Alder-Milstein et al., 2014). One main goal of telehealth is to reduce the disparity that exists in access to healthcare between rural and metropolitan areas (Doyle-Lindrud, 2016).

Previous research has shown the benefits of telehealth. For example, Knight et al. (2016) conducted a mixed-method study to report the benefits of a telehealth consultation

in rural communities in Australia. Staff and clinicians from the practices who had little or no previous experience with telehealth consultations completed a skills training module on telehealth consultation implementation in two cohorts: one completed the module in May 2013 ($n = 74$) and the second in July 2014 ($n = 76$; Knight et al., 2016). Quantitative data indicated that 19 (50%) strongly agreed that the technological aspects were satisfactory, 23(60%) agreed that the clinical aspects (history taking, examination, discussion of management plan) were satisfactory, 23(60%) agreed that the interpersonal aspects were satisfactory, and 21(55%) agreed the telehealth consultation was valuable as a learning experience (Knight et al., 2016). Themes from the qualitative data included investment and support, patients as educators, evolving real patient learning, mental health learning, and job readiness as well as continuity of care, timeliness, and normalization (Knight et al., 2016). Data from both the quantitative and qualitative data demonstrated that the benefits of telehealth consulting are patient-centered, allowing a patient to have a consultation with the specialist and general practitioner concurrently, as well as beneficial to practitioners such as through more connections with peers and more opportunities for learning (Knight et al., 2016). Additional benefits of telehealth consulting include enhancing the total care of the patient through the development of professional relationships and shared care between the general practitioner and a wide range of specialist services including oncology (Knight et al., 2016).

Cancer Care: Time to Initiate Treatment

Shorter times before initiating cancer treatment has been shown to improve patient outcomes. A systematic review of the literature has demonstrated that shorter times to

diagnosis in cancer patients have resulted in more favorable outcomes, and that efforts to expedite the diagnosis of cancer are likely to have benefits for patients including improved survival, earlier-stage diagnosis, and improved quality of life (Neal et al., 2015). Several involving breast cancers have demonstrated evidence between shorter times to diagnosis and the start of treatment improved survival and improved the quality of life, lung cancer research studies have shown mixed findings, and colorectal cancer studies have reported positive findings (Neal et al., 2015). Research related to gastrointestinal and pancreatic cancers has also shown a positive association between survival and quality of life and waiting time (Neal et al., 2015). Therefore, efforts to expedite the diagnosis of symptomatic cancer may benefit patients through earlier-stage diagnosis, improved survival, and improved quality of life (Neal et al., 2015).

One of the barriers to timely care may be cultural disparities, which can create or exacerbate barriers in care and can lead to less optimal navigation results (Ramirez et al., 2014). Ramirez et al. (2014) recruited 480 self-identified Latinas, with 251 placed in a group using the skills of a nurse navigator and 229 with a standard process (nonnavigated control group) at six community-based health clinics. The patients who received nurse navigation had an average wait of 23 days from diagnosis to treatment, whereas nonnavigated patients mean days to treatment was 48.3 days, demonstrating the importance of the ONN (Ramirez et al., 2014). A higher percentage of navigated subjects-initiated treatment within 30 days (69.0 % versus 46.3%; $p = .029$); additionally, there was a statistically significant difference in the 60 day to treatment rate 97.6 in the navigated group versus 73.1 in the control group $p = .001$ (Ramirez et al., 2014). Based

on the results of the study, Ramirez et al. concluded that delays in treatment tend to occur more often among women of lower socioeconomic status and racial/ethnic minorities with disparities in care manifesting themselves in lower survival rates of disadvantaged women. Minority status, lack of medical insurance, inability to access and use medical resources, late diagnoses, and delays in treatment lead to higher rates of death (Ramirez et al., 2014).

More support for timely care is that the benefit of administering adjuvant chemotherapy (AC) quickly after diagnosis has been well established in gastrointestinal cancer treatment. The immune system suppression and angiogenesis following surgical favor tumor progression; therefore, AC is an important additional treatment, with the timing of the initiation after surgery influencing the overall outcome (Malietzis et al., 2015). Colorectal cancer is the third common cause of cancer and the fourth common cause of cancer death worldwide (Malietzis et al., 2015). The best practice for the treatment of colorectal cancer is surgery, adjuvant or neoadjuvant therapy with AC recommended for patients with Stage 3 colon cancer and high-risk node-negative disease after receiving a curative resection (Malietzis et al., 2015). Recommended time to start AC is 4 to 8 weeks after surgery, and increased time to the initiation of AC has been associated with poorer survival. Further, social status may have an impact on the transition to AC (Malietzis et al., 2015). The delay of initiation of AC is common while the mechanism to observe disparities is complex but research has suggested that several factors may impact the time interval between curative surgery and AC with additional

research needed to determine if modifications have beneficial effects on the treatment of gastrointestinal cancer patients (Malietzis et al., 2015).

Cancer Care: Care Coordination

Coordination of care for oncology patients includes scheduling appointments, removing barriers, survivorship, the transition of care, education, and psychosocial support. The ONN provides care coordination with the goal to improve timelines for optimal patient-centered care by decreasing barriers, provide patients an efficient transition of care, improve patient outcomes and satisfaction, and improve the quality of health care (McMullen, 2013). The ONN is effective in improving patient outcomes and satisfaction (Wagner et al., 2014).

Research has shown the benefits of an ONN in cancer care. A randomized trial that compared two groups of patients, one that did not have ONN support and one that did for 4 months, demonstrated that there were no significant differences between the two groups' functional assessment or quality of life, though there were significantly higher scores on the Patient Assessment of Chronic Illness Care scale, $p = 0.01$, with patients having fewer problems with care for the group with the ONN (Wagner et al., 2014). The group with the ONN also reported fewer issues with psychosocial care, care coordination, information, and the patients diagnosed with lung cancer had reduced cancer costs (Wagner et al., 2014). ONN intervention did not impact the quality of life or delays in receiving care, but it does significantly improves the patient experience with cancer care (Wagner et al., 2014). When asked "did a doctor, nurse, or social worker go out of their way to make you feel better emotionally," 89% of the ONN group and 59% of the control

group answered “definitely” (Wagner et al., 2014). Thus, research has shown that ONN support for the oncology patient early in their course improves patient experience and reduces problems in care.

ONNs can also help address issues with delays, lack of information, and lack of coordination (Fillion et al., 2012). Fillion et al., (2012) demonstrated that the ONN provides effectiveness in which coherent information is transferred and understood; including information on medical conditions; patient preferences, values, and context (informational continuity); coherent and timely coordination of services (management continuity); and effective ONN and patient communication bridges not only past to current care but is linked to future care (relational continuity; Fillion et al., 2012).

Research for promoting patient and family empowerment has indicated that the ONN was instrumental in perceiving a sense of mastery for self-care and self-action to manage family, social, and practical problems (active coping), unmet physical needs and system distress (cancer self-management), and unmet psychological, social, spiritual, and practical needs (supportive care; Fillion et al., 2012). The professional navigation framework researched has demonstrated validation that can provide a coherent and patient-centered definition of the role of the ONN (Fillion et al., 2012).

Relevance to Nursing Practice

Over the past years, nursing has been increasing the use of telehealth to deliver health care services, including patient education, assessment, side effect management, and psychosocial support. With the rapid pace of adoption and evolution of telehealth technologies, little time has been provided for nursing to support telehealth practice with

adequate research and knowledge to understand the changes to nursing practice (Nagel & Penner, 2016).

A literature review conducted by Nagel and Penner (2016) discovered that there is a gap in the development of a comprehensive conceptual model or theoretical framework to illustrate the relationships of telehealth technologies to nursing practice. The literature review included CINAHL, Cochrane Reviews, EMBASE, Medline OVID, Medline, PsycINFO, PubMed, and Web of Science to identify articles that articulated a conceptual model, conceptual framework or theoretical framework of nursing practice in relation to telehealth; 442 citations were retrieved with 10 articles fitting the inclusion criteria (Nagel & Penner, 2016). Four of the sources were qualitative research studies, six were specific to nursing practice, two described an interdisciplinary approach, and five were specific to telephone telehealth using a broader range of telehealth technologies (Nagel & Penner, 2016).

Results of Nagel and Penner (2016) literature review indicated that telehealth is an important aspect of nursing practice, building an interactive process between the patient and the nurse, using a changing of information, communication, and interpenetration. The synthesis of existing conceptual models and theoretical frameworks related to telehealth and the nursing practice demonstrated a process to understand the shift in clinical practice to a setting of telehealth (Nagel & Penner, 2016). In order for a nurse to build a picture, contextualize a person in relation to health, and achieve holistic care and presence in telehealth, the nurse will need to be knowledgeable in nursing practice, and understand a theoretical basis, intuition, expertise, and creativity (Nagel &

Penner, 2016). Neal, 2016 accentuates the necessity for telehealth nursing to not only be versed in general nursing knowledge, theory, and practice competencies, also need to have clinical experience, additional expertise using technology possess attributes of intuition and creativity to provide holistic care.

The telehealth MDC will depend on the ONN. The ONN is the pivotal person in the interdisciplinary team and will make a significant contribution to working towards patient-centered care, providing patients with timely, seamless, culturally appropriate guidance and support (McMurray & Cooper, 2017). The ONN also contributes to improving access, equity, efficiency, effectiveness, and transitions the patient from acute to continuing care to achieve better service integration (McMurray & Cooper, 2017). McMurray and Cooper (2017) researched the role of the nurse navigator in multiple countries and found that the ONN practice model is well developed, moving from general service navigation to focusing on a specific disease, sharing in-depth knowledge of cancer care, side effects, and the latest evidence-based interventions, as well as building referral alliances to strengthen the partnership between patients, nurses, and other health professionals. Managing chronic care requires an ONN, particularly in the context of MDC collaborative structures (McMurray & Cooper, 2017). Engaging the nursing research community in tracking the outcomes of the ONN model of care will be important to embed the role in cancer care (McMurray & Cooper, 2017). The research evidence will assist in informing service policies, health reforms, validate the need for smart technologies and link the ONN role to patient outcomes (McMurray & Cooper, 2017). The ONN care model should empower nurses and other members so of the MDC

team to reallocate clinical responsibilities for health promotion, coaching for self-care, medication management, and other functions to help allay shortages of physicians while providing the best coordination of care possible (McMurray & Cooper, 2017).

Local Background and Context

Currently, cancer care in the rural setting is compromised by the lack of radiation oncologist and radiation services. The rural project site that is the subject of this DNP QI development project is located 200 miles from the MSCC. The MSCC serves a cancer population of approximately 11,800 patients per year. The MSCC had taken ownership of the project site about 18 months ago, targeting cancer care as a strategic development opportunity. There are two clinic nurses, one ONN, who also serves as the director of the oncology program, one NP, and two medical oncologists, at the rural site. Anecdotally, these rural providers and the director have mixed thoughts for the implementation of the telehealth MDC, one barrier that has been identified to the implementation of the telehealth MDC. A second barrier is that the two providers are contract with the project site, having clinic days only two times per week, three weeks out of the month. Both providers also have a primary practice at a different medical practice that is not part of the health system.

The data reviewed has identified that the telehealth MDC, once implemented, may improve timeliness to treatment and increase patient satisfaction. The DNP QI development project compared data from the time of diagnoses to initiation of treatment and patient satisfaction between two rural sites (one with the MDC process in place for 36 patients at the rural comparison non-project site, and 35 patients without the MDC at

the project site). The new patient volume for the last year at the project site for patients with solid tumors was 40, with five of the patients not returning for treatment. Currently, the time from diagnosis to the initiation of treatment is in excess of 12 to 80 days at the project site. In comparison to the systems rural comparison non-project site that utilizes the MDC approach, the time from diagnosis to the initiation of treatment is four to 35 days. Increasing interest in healthcare technology today is telehealth medicine with the goal of reducing the disparities that exist in access to patients between rural and metropolitan areas (Doyle-Lindrud, 2016).

The implementation of telehealth at the project site will assist the community, the mission, the organization, and is in line with the strategic vision, to increase access in specialty care. A system-wide community assessment was completed at the DNP QI development project site and an overriding need to increase access to specialty care was apparent, especially for the oncology patient. Telehealth will be one option to increase access for the communities' oncology patient.

Role of the DNP Student

The role of the DNP student for the telehealth MDC was to develop a QI initiative for a MDC rural/metropolitan project team. As the DNP facilitator for this project I was responsible for (a) performing secondary analyses on de-identified current state data and comparing time to treatment with two rural locations in the system, one that is currently using a MDC approach and one that is not, (b) designing a new workflow for the project site developing the MDC, presenting the data and new workflow to executive leadership at the MSCC and the project site, in order to sustain the change over time. Full

implementation and evaluation will be the responsibility of the project site and the MSCC leadership and is out of scope for the DNP QI development project. The project team for the MSCC will include the disease specific ONN, NP, and the physicians from each oncology discipline, surgical, medical, and radiation. Project site team will include the ONN, NP, and physician. The project site's mission is to improve lives and to move the patient from healthcare to health. The goal of the DNP QI development project is to develop a process to reduce the time from diagnosis to the initiation of treatment, to provide a telehealth MDC approach for the rural oncology patient, and to provide access to an National Comprehensive Cancer Network accredited cancer center, therefore improving care coordination and patient satisfaction. As a DNP student, an oncology nurse for over 15 years, an understanding of the needs for the rural community, a passion for sharing research, and currently the director of oncology at the MSCC, improving the lives of oncology patients by improving the patient's experience, reducing time to treatment and more effectively coordinating care are the motivating factors for the telehealth oncology MDC.

Role of the Project Team

The DNP team included a DNP/PhD prepared preceptor/mentor, a PhD prepared facilitator/chair, and the DNP student. The DNP team assisted the DNP student in leading the development of the QI MDC project team. The QI project team included the ONN and NP from the project site, the MSCC QI team included the disease ONN and NP who is responsible for the daily operations of the MDC. The QI team will be directly involved with the implementation of the telehealth MDC at the project site. The DNP QI

project was the development of a telehealth MDC process, implementation and sustaining change will continue after the completion of the DNP QI development project with a goal of using the telehealth MDC to provide oncology care to all disease sites.

The American Association of Colleges of Nursing recommends that the DNP QI development project team be comprised of a doctorally-prepared mentor/facilitator, a practice mentor/preceptor and the DNP student (Carlson, Staffileno, & Pencak Murphy, 2017). Collaboration provides an opportunity for the mentor, facilitator, and the student to expand their thinking and scholarly formation with a dynamic interchange that will enhance the perspectives, scholarly thinking, and intellectual curiosity of all members (Carlson et al., 2017). The facilitator enhances the team by helping both the student and the mentor to navigate the project site system, assuring that the focus of the project is a priority for the organization, and approving the project implementation plan that is feasible, acceptable, and sustainable for the organization (Carlson et al., 2017). As the student, I have found that weekly meetings with my mentor/preceptor and calls with my facilitator have provided a framework and timeline for the QI project team.

Summary

Section two has provided a method to demonstrate the concepts, models, and theories related to the telehealth DNP QI development project and the QI project team. Also outlined is the importance of the MDC, relevance to nursing practice, the change process, and the role of the DNP student to implement the project. Section two has provided the opportunity to identify the gap-in-practice and the need for the MDC telehealth DNP QI development project, to improve treatment outcomes for the rural

oncology patient. Section 3 will highlight sources of evidence, reducing the time from diagnosis to treatment, archival and operations data, evidence generated for this project, and an analysis and synthesis of the project.

Section 3: Collection and Analysis of Evidence

Introduction

The first step to help decrease anxiety associated with cancer diagnosis is quick access to care and the initiation of treatment, but for the patient living in a rural community, access to quality cancer care may be delayed. However, access to an oncology telehealth MDC can provide quick access to all oncology disciplines at one meeting, reducing the time to the initial consultation and initiation of treatment. The purpose of this project was to develop a telehealth MDC process at the project site, which may reduce time from diagnosis to treatment for rural cancer patients. Section 3 will include the sources of evidence, archival and operational data, evidence generated by the project, and analysis and synthesis of data collection.

Practice-Focused Question

The practice-focused question was: Does a telehealth MDC reduce the time from diagnosis to treatment initiation in rural area cancer patients and improve patient satisfaction? For rural patients, access to cancer care can be limited or difficult to obtain (Dyk, 2014). For the rural patient in the United States, there are multiple barriers to quality health care including accessibility, utilization, efficiency, the effectiveness of healthcare and cost (Dyk, 2014). There may be additional difficulties for the oncology patient: the patient may have a significant distance of travel for treatment, lack of proximity to cancer care, reduced access to state-of-the-art therapies, and limited or no access to clinical trials (Gruca et.al., 2014). For these reasons, the purpose of this project was to develop an oncology telehealth MDC process between a metro cancer center and a

rural community to provide an opportunity for the rural oncology patient access to the state's only National Comprehensive Cancer Network-designated cancer center with the goal of reducing the time from diagnosis to the initial oncology consultation and the initiation of cancer treatment.

Sources of Evidence

The literature provided support for the development of this telehealth project. Sources of evidence included published research, archival evidence, as well as evidence generated for the doctoral project. Evidence for the doctoral project includes the comparison of the project site and a rural comparison nonproject site within the health system, one currently using a MDC and one without to determine the difference in days from time of diagnosis to the first treatment.

Published Outcomes and Research

Databases and search engines used to explore outcomes for the practice-focused question included the Walden University Library and Google Scholar. Databases included Medline, CINAHL, PubMed, ProQuest Nursing, EBSCO, Medical Collection, Allied Health Source, and Ovid. Key search terms included *health technology, telehealth, oncology nurse navigator, time to treatment, gastrointestinal cancer, breast cancer, oncology, cancer, access, cancer treatment, telemedicine, implementation, e-health, patient satisfaction, and gastric cancer*. See Appendix A for the literature matrix.

Archival and Operational Data

Data collection included archival data from the project site and from the rural comparison nonproject site. Archival data collection for the project site included (a) the

time from diagnoses to the first oncology consultation, (b) the time from the initial consultation to the initiation of treatment, and (c) the time from diagnoses to the initiation of treatment. Archival data from the rural comparison nonproject site included (a) the time from diagnoses to the MDC, (b) the time from initial MDC to the initiation of treatment, and (c) the time from diagnoses to the initiation of treatment. These time frames were compared for an equal number of patients between the two sites.

Timeframes for patients with sequential consultations were compared to patients who participated in the MDC, where all needed disciplines are present. Data were collected from the project site on 35 new oncology patients and were compared to 36 oncology patients who have attended a MDC at the rural comparison nonproject site. All data were downloaded from the electronic health record, deidentified, and provided to me as the DNP student and project facilitator.

In addition to timeframe data, descriptive data included summarized patient satisfaction data at the rural site without telehealth on the question “Was it easy to get an appointment scheduled when you wanted?” (see Appendix B). The site using a MDC asks a question about whether it is “easy to get appointment.” Although the questions are similar, they are not measured identically because different vendors are used to obtain patient satisfaction scores. Therefore, only descriptive statistics were used to compare the rural comparison non-project site and the project site on patient satisfaction.

Evidence Generated for the Doctoral Project

Evidence for this project were collected by measuring time from diagnosis to the initiation of treatment in days and comparing the two rural sites, one with (rural

comparison site) and one without an MDC (project site). Patient satisfaction scores from the project site current process and the rural comparison nonproject site MDC process were also evaluated.

Participants and procedures. There were 36 new oncology patients from the rural comparison nonproject site and 35 oncology patients from the project site whose medical records were downloaded from the electronic health record and provided to me as the DNP student in a deidentified excel spreadsheet for secondary analysis. The patient charts were selected on the basis that the project site location saw 40 new solid tumor oncology patients over the past year. Of these, five of the rural patients did not return to the project site for treatment and therefore were excluded from the analyses. Key data points included in the electronic health record data included (a) time in days from pathology diagnosis to first consultation and (b) time in days from pathology to first treatment.

After presenting the telehealth MDC process to the project site, full implementation will be the responsibility of the executive leadership team. Once implemented, the project site ONN will work with the MSCC to coordinate the telehealth consultation and provide patient education. As part of normal patient care, the NP from the project site will complete a history and physical for the patient and present the patient to the MSCC MDC tumor board. There is a tumor board for each disease site, each patient will be present at the appropriate disease tumor board. The MSCC MDC tumor board is a representative group from each oncology discipline, medical, radiation, and surgical oncology, a pathologist, radiologist, ONN, clinic nurses, social worker, and a

nutritionist. Included in the tumor board presentation is a review of pathology, radiology scans, mammograms, and the patient's past medical and oncology history. Patients not presented at tumor board will not receive an MDC. The tumor board presentation is provided on each MDC patient before the MDC visit and after review of the patient's history, a plan is determined. During the MDC, the plan will be discussed with the patient and family, individually by each oncology discipline that will be involved in the patient's care. When the patient is receiving the plan of care by the physicians, the clinic nurse at the project site will be in attendance to provide any necessary education.

At the MSCC, as stated, all disciplines will attend the tumor board for the discussion on the telehealth MDC patient. The ONN will prepare the telehealth MDC and introduce herself to the patient as a point of contact and to provide any education. The ONN will introduce each oncology provider that the patient will be seeing and will stay in the room during the consultation to understand the plan and provide any coordination of care necessary for the initiation of treatment.

Providers and staff will be trained on the telehealth process and equipment. The ONN at both locations (the MSCC and the project site) will assist in scheduling required radiology scans, obtaining reports and pathology for presentation at the MDC tumor board. The NP will complete the initial assessment and present the patient history, review pathology and radiology scans via telehealth at the tumor board to the oncology team without the patient being present. The health information that is presented provides the oncology team with the needed information to determine a plan for the MDC patient.

Before the start of the telehealth MDC, a brief in-service educational program will be provided to the staff and providers prior to the implementation of the MDC telehealth consultation with the use of a U-learn, the organization's computer-based education tool. In addition, at each location, education for using the telehealth equipment, scheduling dual appointments, and the culture of telehealth for the patient and the staff. Debriefing at each location should be held weekly with the staff and providers using open-ended questions (see Appendix C) to understand if the telehealth process is satisfactory or improvements need to be made.

Protections. Ethical protection of participants included Institutional Review Board (IRB) approval from both the MSCC and Walden University. I will follow the requirements specified in the Walden QI IRB manual. All data, archival, operational and data collected for the DNP QI development project will be collected by the QI or IT department, de-identified, and provided to me, the QI/DNP QI development project leader, in an excel file for secondary analyses. IRB has been approved by Walden University and the IRB approval number is 09-27-18-0424521.

Analysis and Synthesis

Timeframe data has been obtained for sample oncology patients from the project site and the rural comparison non-project site locations to determine the difference in the mean score across all patients in the samples. A test of normality was used to determine whether or not parametric tests were indicated. Accordingly, non-parametric tests were used. Timeframe data had been measured in days, was captured from the electronic

health record, and was compared using the Mann-Whitney U test to determine statistical significance.

Patient satisfaction scores for both the rural site without the MDC (project site) and the rural site with the MDC (rural comparison non-project site) were collected. Each site used a different vendor to collect patient satisfaction data and a different sampling. All patients were included in the patient satisfaction survey process both those using the MDC and those outpatients who did not use the MDC. However, each site had a question asking about ease of securing an appointment. Data were secured from these outpatients at each site and compared using gross descriptive, because of the limitations on the data collection process.

Once the telehealth MDC has been fully implemented at the project site, data on time in days from diagnosis to initiation of treatment will continue and be compared to the rural comparison non-project site seeking to achieve notable improvements in the project site start times to treatment after full use of the MSCC and the MDC have been realized. In addition, patient satisfaction will be monitored at the project site using the same system as the MSCC and rural comparison non-project site. There are specific questions on oncology processes and the site will likely see a remarkable improvement in their oncology patient satisfaction outpatient scores.

Summary

Section 3 is an overview of the collection and analysis of the evidence for the DNP QI development project. Identified in Section 3 are the methods of how the evidence to support the practice-focused question had been obtained, the process of the

literature search to provide support for the DNP QI development project, the type of data collected, data analyses, participants and their protections. Section four reports the findings and recommendations.

Section 4: Findings and Recommendations

Introduction

Timeliness to care for a new diagnosis of cancer can improve patient experience and outcomes. The association between a shorter time from diagnosis to treatment benefits the cancer patient with more favorable outcomes, improved survival, earlier-stage diagnoses, and improved quality of life (Neal et al., 2015). Management and assessment of the oncology patient requires complex clinical decision-making, and a MDC approach may reduce the wait time to receive care. The MDC approach ensures timely and appropriate care by joining multiple, specialized oncologists to review findings and discuss a treatment path at the same time (Pillay et al., 2016).

The practice-focused question for this project was: Does the telehealth MDC reduce the time from diagnosis to treatment initiation and improve patient satisfaction in rural area cancer patients? The purpose was the development of a telehealth MDC process at the project site. To forward the implementation and overcome barriers at the site, comparison data were presented to the project site leadership from a rural comparison nonproject site and the project site, one with and one without an MDC process. The data demonstrated the impact of MDC and supports implementation of the telehealth MDC. Sources of evidence include analytical data from two rural locations within the health system to compare the timeframe from diagnosis to the first cancer treatment and patient satisfaction. The data provides a direction for the project site to improve both clinical care and patient experience by implementing the telehealth MDC.

Findings and Implications

Data were downloaded from the electronic health record at both locations to determine the timeframe from diagnosis, first pathology report, time to first oncology consultation, and time to the first cancer treatment. These data were compiled by the site and provided to me in deidentified Excel files for secondary analysis. The comparison at the two locations included one site with MDC (rural comparison nonproject site) and one site without MDC (project site).

The patients seen in the MDC had a statistically significant difference from time of diagnosis to receiving the first treatment ($z = -5.811, p < .0001$). The Kolmogorov-Smirnov test for the assessment of normality was performed and the data collected were not normally distributed, $d(72) = 0.131, p = 0.004$. See Figure 2 for a normal Q – Q plot of number of days from diagnosis to first treatment and see Figure 3 for a detrended normal Q – Q plot of number of days from diagnosis to first treatment.

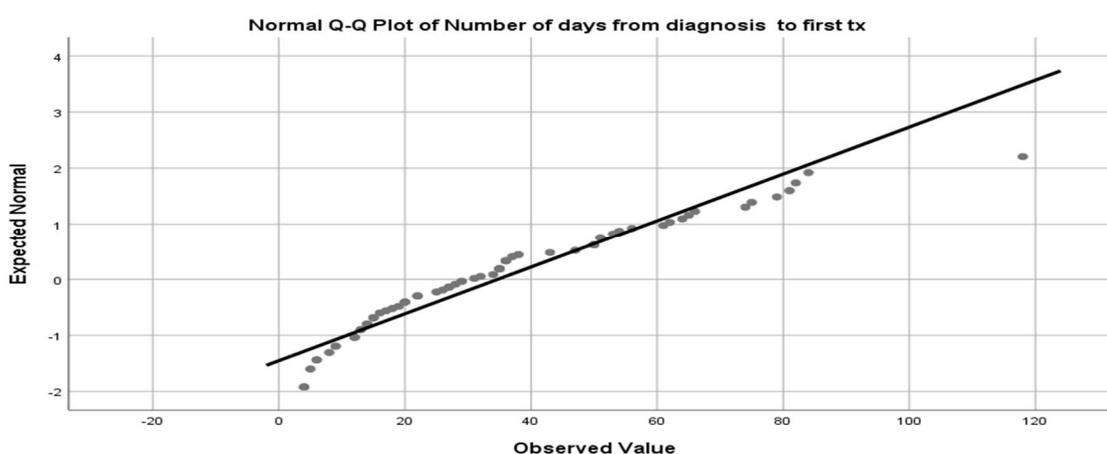


Figure 2. Normal Q-Q plot.

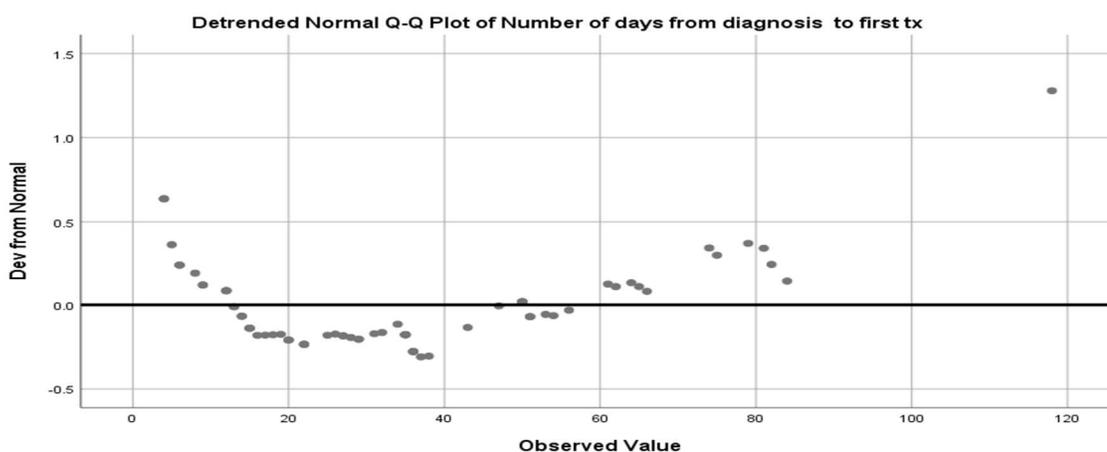


Figure 3. Detrended Q-Q plot.

The Mann-Whitney U test, a nonparametric test that does not require the assumption of normal distribution, was used to determine whether there was a statistically significant difference in the means. The Mann-Whitney test indicated that patients that received MDC visit at the rural comparison nonproject site in a quicker timeframe from diagnosis to the first cancer treatment with 19.16 days compared to 51.23 days at the project site without the MDC ($z = -5.811, p < .0001$), demonstrating that the MDC reduced the time from diagnosis to the first cancer treatment. Patients seen in the MDC were seen sooner, the average was 5 days from diagnosis to MDC. The patients that were seen at the project site without the MDC had the first oncology consultation averaged 14 days after diagnosis. The Mann-Whitney U test indicated a statistically significant difference ($z = -4.097; p = 0.000$). One difference found was that the patient that is seen in the MDC can see all oncology disciplines at one appointment, necessary tests were scheduled at the MDC visit with many being performed on the same day, reducing the delay of waiting for additional testing.

Despite the statistically significant results, there were some limitations with these data. There is no data comparison for the site with the telehealth MDC prior to its implementation. Therefore, it cannot be determined whether the initiation of the telehealth MDC was what caused the rural site to have a shortened timeframe. However, the data does suggest that there are statistically significant differences between one rural site that uses the telehealth MDC and one that does not. Thus, the MDC process contributed to the difference in the time to the first cancer treatment by reducing the time from diagnosis to the first MDC and improved coordination of care. The data support the potential effectiveness of the MDC to influence the project site to implement a telehealth MDC, further supporting success of the doctoral project.

The initiation of a telehealth MDC with the MSCC will assist in reducing the delays for the project site patients. Patients will have the opportunity to see all three oncology disciplines at one consultation, receive coordination of care by the ONN, receive patient education during the MDC on what to expect, clinical studies, and the next steps to starting treatment. Additional test will be scheduled promptly at the time of the MDC and/or before the MDC if deemed necessary by the ONN and MDC team. The positive social change for the project site oncology patient may be a reduced time from the diagnosis to the first cancer treatment, improving the patient experience, improving survival, and improving the quality of life for the rural oncology patient.

The patient experience scores are de-identified so no relationships can be determined between patient satisfaction surveys scores from MDC patients at the rural comparison non-project site and the project site. Also, both sites are using a different

vendor to evaluate the patient experience. In response to a patient satisfaction question that asked “Was it easy to get an appointment when you wanted?” 55.7% project site outpatients agreed with this statement. The project site does not use the MDC process. When rural comparison non-project site outpatients completed a similar patient satisfaction question “scheduled appointment as soon as needed?” 83.4% agreed with this statement. The rural comparison non-project site does employ the use of the MDC.

When these data were presented to the leadership at the project site, the chief medical officer, additional insight as to barriers for patients were identified. A major barrier identified at the project site was coordination of care. The chief medical officer realizes that patients had several appointments to see all disciplines including having to see radiation oncology at a different location and that these data supported their theories about the delays. Long delays for scheduling test and receiving the results necessary to determine the treatment plan also delayed the initiation of treatment. Access to the first oncology consultation was delayed because of the medical oncologist availability, only seeing new patients six days per month. The project site saw 40 solid tumor new patients over the last year, with five patients not returning for treatment and lost to follow up. For both locations, with and without the MDC, other delays in the initiation of treatment included patients deciding on treatment, scheduling additional tests, obtaining additional test results, and coordination of care. The comparison in the timeframe from diagnosis to the first cancer treatment is reduced with the MDC process and related to reduced time to obtain additional testing results and the coordination of care by the ONN.

Recommendations

The primary recommendation for the project site to improve access and to reduce the time from diagnosis to the first cancer treatment is to fully implement the telehealth MDC with the MSCC. After these data were analyzed, they were presented to the chief medical officer at the project site for their use in persuading the rank and file attending physicians to join in the MDC process. The time to treatment data has been discussed with the executive leadership team at both the MSCC and the project site and leadership agrees that the next step is to implement the telehealth MDC. Also recommended is to have the ONN's at both locations work together for the telehealth MDC patient on coordination of care to reduce the time from the consult to additional studies needed to be scheduled. In addition to reducing the time from diagnosis to the first cancer treatment, the recommendation is to improve patient satisfaction focusing on the questions: "was it is easy to receive an appointment" and the addition of the telehealth patient experience questions, "were you comfortable interacting with the specialist via video-conferencing equipment", "were you satisfied with seeing a specialist via telehealth", and "during your telehealth visit, was the specialist focused on your care". After full implementation of the telehealth MDC, not within the scope of the DNP QI development project, it has been suggested to include staff and provider satisfaction with the telehealth process. After full implementation, staff and provider satisfaction should be evaluated by using an open-ended survey and weekly debriefings (see Appendix C).

Strengths and Limitations of the Project

Strengths of the DNP QI development project included discovering the need to improve access to the rural community and the importance that an MDC can have on reducing the time from diagnosis to the first cancer treatment. The DNP QI development project also introduced new concepts in providing cancer care and treatment to a newly acquired cancer facility within the healthcare system. The DNP QI development project provided insight on delays in cancer care at the project site and provided an avenue to introduce options to improve care to the rural community oncology patient.

Limitations included the resistance of the project site to fully implement the MDC, which was the original plan of this DNP QI development project. Also, there is a lack of on-site radiation therapy at the project site and resistance to allow a community radiation oncologist to consult patients at the project site, and reduced numbers of days that the medical oncologist provide care. There was significant resistance to change among the private medical oncologist at the site, and hesitancy to change existing practice patterns despite the benefits to the patient including but not limited to the patient experience, and improved quality of life for the rural oncology patient. Despite these limitations, the chief medical officer found the data compelling, and there is a full commitment to present the data, in the interest of patient care, to the practicing medical oncologist to agree to the telehealth MDC. The oncology team at the MSCC will continue to work with the project site leadership to implement the telehealth MDC, to assist in providing timely care to treatment and access to the only National Cancer Institute cancer center in the state.

Section 5: Dissemination Plan

This DNP QI development project has been presented to the executive leadership team at the MSCC and the project site with the next step to full implementation of the telehealth MDC. The executive leadership team from MSCC included the executive director of oncology, the medical director, chief medical officer of oncology, and me. The executive leadership of project site included the chief medical officer and executive director of the oncology program. There was interest in the telehealth MDC, and the data provided indicated to the project site executive leadership team the importance of implementing the telehealth MDC. The greatest challenge of this project was to convince the project site that there was a practice problem, delayed access to care, and the importance of improving the time from diagnosis to the first cancer treatment for the rural oncology patient.

The project site leadership team listened throughout the presentation and had several questions that included (a) How will the patient travel to receive treatment?, (b) How will the patient be billed?, (c) Can the patient receive chemotherapy at the project site?, (d) How will this affect the oncology providers, including pathology and radiology at the project site?, and (e) Is there housing for the patients at the MSCC? The MSCC leadership team and I were able to answer all the questions affirmatively and with direction. For example, the patient may use the telehealth MDC as a second opinion, and the MSCC providers will recommend a plan to the patient and the project site providers. The ONN and clinic nurses at the MSCC and the project site can provide patient education and support through the course of treatment. Most insurances cover telehealth,

which would be determined before the telehealth MDC visit. It would be the patient's choice where to receive treatment and radiation therapy would be recommended to be received within the healthcare system. All providers would be included in the tumor board discussion; however, the project site medical oncologist would be the primary oncologist. There is housing at a local hotel across from the MSCC for the oncology patient. All questions were answered to the satisfaction of the project site leadership team, and they voiced commitment to communicate implementation plans to the medical oncologist.

The next step for the project site leadership team is to present the data and the concept to the oncology providers; the oncology director, who is also the ONN; and the nursing staff. For the project site leadership team, the chief medical officer stated this may take some time and a slow approach. The chief medical officer stated, "I do not want the oncology team to feel that they are not taking good care of the patients or that we are trying to transfer the care. The data, process, and telehealth concept are excellent, and we need to move in this direction to improve access for the oncology patient." Thus, the data provided can begin the conversation to make changes to the current process that will reduce the time from diagnosis to the first cancer treatment, as the data demonstrated the importance of the MDC process. Education will be provided for the ONN at the project site on current available clinic trials and the importance of timely coordination of care including scheduling additional studies and appointments.

Analysis of Self

As the practitioner at the beginning of this project, my thought was that a telehealth MDC DNP QI development project was needed and would be an excellent opportunity to improve access for the rural oncology patient. I presented my project to the executive oncology leadership team at the MSCC, and they were interested in the project and provided permission to move forward. As the scholar and project manager I began to investigate the process and what was needed to move forward. The first barrier that I encountered was working with the healthcare systems organization's telehealth team and the delays to implement telehealth. The delays included the electronic health record build to schedule and develop the telehealth MDC process. Another barrier was meeting with the project site, which was recently acquired by the MSCC and was not welcoming to the new cancer care team and resisted being a part of the new healthcare system. As the scholar, I researched change theories to assist in the change process. I also researched the advantages of telehealth and the MDC to present to the project site. I provided evidence from the literature to the project site on the importance of timely cancer care. However, the project site was not interested in the telehealth MDC, but I had the MSCC executive leadership team to provide support to continue with developing the telehealth MDC process. In presenting the telehealth MDC project to the executive leadership team at the project site, the data showed the statistical significance on the differences in scores when the project site (without the MDC) was compared to the rural comparison nonproject site (with the MDC). All agreed that to improve access for the rural oncology patient the MDC must be implemented. As a result, the next step for the

project site will be the implementation of the telehealth MDC to improve the time from diagnosis to the first cancer treatment. I am looking forward to having the opportunity to work with the project site to assist with the implementation of the telehealth MDC to improve oncology care for the rural oncology patient.

Summary

Within this DNP QI development project and as project manager, I have defined the problem, stated a practice-focused question, researched the problem, identified barriers, developed an understanding of the data, identified a solution, and presented the implementation of the project to the project site. The goal of this project was to improve access for the rural oncology patient. The practice-focused question was “Does the telehealth MDC reduce the time from diagnosis to treatment initiation in rural area cancer patients and improve patient satisfaction?” The data indicated that MDC does reduce time from diagnosis to treatment, and after presenting the data and research to the project site, the next step is the full implementation of the telehealth MDC, which was outside the scope of this project.

This project has also provided education to the ONN at the project site on identifying the need to improve coordination of care and patient education. Clinical trials were introduced to the ONN to provide options for the rural oncology patient. Most importantly, the project has provided an avenue for the rural oncology patient access to the MSCC MDC process to reduce the time from diagnosis to first cancer treatment, improve the satisfaction of patients on timely cancer care, and improve the quality of life for rural oncology patients.

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Appendix A: Literature Matrix

LOE= Leveling system is from *Evidence-Based Practice in Nursing and Healthcare: A Guide to Best Practice* (2nd ed.) by Bernadette Mazurek Melnyk and Ellen Fineout-Overholt.

LOE I = Evidence from systematic review or meta-analysis of all relevant randomized controlled trials (RCTs)

LOE II = Evidence from well-designed RCTs

LOE III = Evidence from well-designed controlled trials without randomization

LOE IV = Evidence from systematic reviews of descriptive and qualitative studies

LOE V = Evidence from single descriptive or qualitative studies

LOE VI = Evidence from the opinion of authorities and/or reports of expert committees

Author & Levels of Evidence	Framework	Purpose	Methodology	Results	Conclusions	Implications for future research	Implications for practice
Alder-Milstein, Devdar, Bates (2014) LOE: V	Capture key functions for which hospitals used health information and communication technology in telehealth	Identify the hospital-, market, and state-level factors associated with telehealth adoption among US hospital	The use of national data from the IT Supplement to the AHA with the use of an analytic sample	Calculated national telehealth adoption rate among sample hospitals and participation rates by state using a multivariable logistic regression model with hospital, market, and state characteristics	Telehealth is an effect way to use communications technologies to improve health care value, increase patients' access to care, and provide hospitals a competitive advantage.	Sates my need to consider implementing policies to promote private payer reimbursement and relaxing policies requiring providers to have special license to engage in telehealth across state boundaries	Telehealth adoption
Appelbaum (2012) LOE: VI	Gather arguments regarding the classic change management model proposed by John P. Kotter in his 1996 book Leading Change	Test the "how-to-do-change management"	The literature on change management was reviewed for each of the eight steps defined in Kotter's model, to review how much support each of these steps had, individually and collectively, in 15 years of literature.	Review of articles related to each of the eight components of Dotter's change model to highlight the value of each. Found support for most of the steps, no formal studies were found covering the entire spectrum and structure of the model. No evidence was found against Kotter's change management model and it remains a recommendable reference.	Kotter's change model is used more from its popularity and its direct and useable format than any scientific consensus on the results	Further studies should examine the validity of Kotter's model as a whole and change management research should form a greater link with stakeholders in order to translate current research into a format usable by practitioners	Support the use of Kotter's Change management model

(table continues)

Author & Levels of Evidence	Framework	Purpose	Methodology	Results	Conclusions	Implications for future research	Implications for practice
Blicher et al. (2016) LOE: I	Investigate the relationship between the time from diagnosis to breast cancer surgery (treatment) and survival, using separate analyses of two of the largest cancer databases in the United States	To determine if time from breast cancer diagnosis to surgery correlated with overall survival and disease-specific survival	Two independent population-based studies were conducted of national data from the Surveillance, Epidemiology, and End Results (SEER)-Medicare-linked database and the National Cancer Database (NCDB). The SEER-Medicare cohort included Medicare patients older than 65 years, and the NCDB cohort included patients cared for at Commission on Cancer-accredited facilities throughout the United States. Each analysis assessed overall survival as a function of time between diagnosis and surgery by evaluating 5 intervals (≤ 30 , 31-60, 61-90, 91-120, and 121-180 days) and disease-specific survival at 60-day intervals. All patients were diagnosed with noninflammatory, no metastatic, invasive breast cancer and underwent surgery as initial treatment.	The SEER-Medicare cohort had 94 544 patients 66 years or older diagnosed between 1992 and 2009. With each interval of delay increase, overall survival was lower overall	Greater time to treatment is associated with lower overall and disease-specific survival	Questions remain as to whether time-dependent measures improve the quality of care, there has been consideration of time to surgery as a quality measure. Previous lack of clear data has weakened the need for such a standard, but the findings suggest that a reasonable delay threshold might be appropriate	Determine if decreasing time from diagnosis to the initiation of treatment improves survival

(table continues)

Author & Levels of Evidence	Framework	Purpose	Methodology	Results	Conclusions	Implications for future research	Implications for practice
Brown (2014) LOE: IV	Uses a clinical example to illustrate how the Iowa Model can be used effectively to implement practice change at the unit or organizational level	How nurses and other healthcare providers use the Iowa Model to make a change to clinical practice and improve overall patient outcomes	The use of the Iowa Model as an example of how a model can help focus on the process of implementing evidence-based practice (EBP)	Successful implementation of an EBP change using the Iowa Model	The use of an EBP model, the Iowa Model, can assist nurses organize the practice change and provide a step-by-step process on how to make the change for a unit or organization	The use of the Iowa Model to implement interventions based on the highest levels of evidence	The use of the Iowa Model to implement EBP change
Carlson, Staffileno, & Murphy (2017) LOE: VII	purposefully pairing DNP-PhD faculty as part of the DNP QI development project team as a collaborative approach to promote a community of scholars	How can we further cultivate doctoral students and graduates to work collaboratively?	Literature review describing a collaborative DNP-PhD team for DNP QI development project oversight	Promotes collective ownership, addresses the intensity of the advisor-student relationship, fosters DNP as a scholar-writer, enhances different approaches/views related to scholarly dissemination, highlights the skill set of doctoral faculty, and establishes future collaboration	An opportunity to establish a project team that promotes scholarly formation, collaboration, and efficiency	To leverage the potential of both DNPs and PhDs knowledge and expertise, encourage mutual respect and a vibrant intellectual community, and to promote scholarly formation of students while exemplifying the value of collaboration	Improve collaboration and develop a team with the DNP and PhD faculty and the DNP scholar

(table continues)

Author & Levels of Evidence	Framework	Purpose	Methodology	Results	Conclusions	Implications for future research	Implications for practice
Doyle-Lindrud (2016) LOE: VII	Benefits of telemedicine to increase access to care for patients living in remote locations	Determine whether telemedicine can increase access to rural patients and decrease cost for healthcare systems	Literature review on the growing interest of teleoncology, TeleNurse Network, and the American Telemedicine Association	Telemedicine increases access to rural location, may decrease cost of healthcare, and barriers for telemedicine exist because of federal and state laws prior to the development of telemedicine technology	Telemedicine increases access to a multidisciplinary oncology team from a comprehensive cancer center to patients living in rural areas	Forty-six states and Washington, DC have some type of Medicaid reimbursement; 29 states and Washington, DC have pay parity laws for telemedicine that require private insurers to cover remote consultations services. Medicare coverage is limited to certain beneficiaries, technologies, and areas	Benefits of telemedicine
Dyk (2014) LOE: I	Outline of development methodology theoretical backgrounds and validation	Find and compare frameworks for implementing telehealth services	Systematic review of peer-reviewed articles and book. Individual case studies were excluded unless they contained frameworks applicable to telehealth	Nine frameworks were identified for future development of telehealth services	A holistic implementation approach is needed that induces technology, organizational structures, change management, economic feasibility, societal impacts, perceptions, user-friendliness, evaluation, and evidence, legislation, policy, and governance	Best-practice implementation approaches will help telehealth address diverse problems in modern healthcare	Frameworks for implementing telehealth
Fillion et al. (2012) LOE: V	An interview guide based on an evaluative conceptual framework with questions related to professional navigator's role	To elaborate, refine, and validate the professional navigation framework	A two-step approach: a qualitative evaluative design and formal consultations	Supported a bi-dimensional framework and defined key role functions: continuity of care and patient-centered care corresponds to empowerment	The framework clarifies the role and functions of professional navigators and suggests outcomes for program evaluations	A definition of the nurse, professional navigators may be more efficient and less challenged, and the integrative framework could improve the effectiveness of cancer navigation programs	Professional navigation framework validation

(table continues)

Author & Levels of Evidence	Framework	Purpose	Methodology	Results	Conclusions	Implications for future research	Implications for practice
Gruca, Nam, & Tracy (2014) LOE: III	Examine long-term in medical oncology outreach in Iowa, a state with a high population of rural residents	Options for brining specialized cancer care to rural communities, including telemedicine	Analyzed trends in the number of cities hosting medical oncology visiting consultant clinic (VCC) and the number of annual clinic days	There was a significant increase of rural cities served by medical oncology outreach and a significant increase clinic days	Access to cancer care in rural Iowa increased significantly in the post-Medicare Modernization Act period	The Affordable Care Act seeks to expand access for vulnerable populations and it will be critical to understand the existing system of rural cancer care delivery	Increasing access to cancer care in the rural population with the use of visiting oncologists and telemedicine
Knight et al. (2016) LOE: V	Encourage the use of selected telehealth consultations between patients in a primary care setting with a specialist service as an integral aspect of medical education	Benefits of telehealth consultation to improve medical education in a primary care setting	Qualitative and quantitative analyses conducted	Enhanced learning, satisfactory interpersonal aspects, qualitative data emerged five themes on the educational benefits with three identified concerns with clinical benefits	The results demonstrated strong synergies between learning derived from telehealth consulting and clinical benefits to the patient and clinicians involved	Strengths included adherence to the published research protocol, limitations included short study timeframe and a change in the financial incentive payments through Medicare	Benefits of telehealth consultations
Kozak, Khorana, Amarnath, Glass, Kalady (2017) LOE: II	Retrospective review analyzed the effect of MDC on time to treatment for colorectal cancer (CRC)	Do MDC's affect the time to treatment for CRC patients	Control trial without randomization	MDC patients experience a 7.9-day shorter time to treatment from first consultation	MDC for CRC clinic yielded decreased intervals from the first consultation to treatment	Optimizing systematic process is important for the patient and the health system to develop a more efficient patient flow to yield increased access	MDC reduce time to treatment in CRC

(table continues)

Author & Levels of Evidence	Framework	Purpose	Methodology	Results	Conclusions	Implications for future research	Implications for practice
Lamb, Jalil, Sevdalis, Vincent, Green (2014) LOE: IV	To understand the benefits to patients and healthcare professionals of the MDT	Explore members views on the existing practice of urology MDT working, and to identify potential interventions for improving the efficiency and productivity of the MDT meeting	Online survey of urology oncologists, urologists, and cancer nurses on the efficiency of multidisciplinary teams (MDT) meetings, utility, and strategies for improving the MDT with the use of treating case protocols, prioritizing cases and splitting the MDT into subspecialty	68% of respondents reported that attending the MDT meeting improves efficiency in care through improved clinical decisions, planning investigations, discussing plans with patients, specialty referrals, and documentation in patient records	Urology MDT members find the MDT meeting useful, some improvements in efficiency and effectiveness may be possible by prioritizing cases.	Potential disadvantages of the MDT include loss of efficiency, loss of team approach, unavailability of members, and increased administrative work. Further research is needed to test the effectiveness of MDT meetings, cancer care pathways, and patient outcomes in clinical practice.	Determine the efficiency of an MDT
Malietzis et al. (2015) LOE: I	Determine the survival benefit of administering adjuvant chemotherapy (AC) in colorectal cancer (CRC) and the impact of its timing	Determine whether a longer time to initiating AC is associated with poorer survival	Systematic review and meta-analysis to study the response to early versus delayed AC Initiation	Meta-analysis demonstrated age > 75 years, marital status-single, low socioeconomic status, worse comorbidity status, low grade tumor, prolonged length of stay, and readmission were significant predictors of delayed initiation of AC. Laparoscopy compared to an open surgical approach was a significant predictor of earlier AC initiation	Delays in the initiation of AC are common, both the mechanism of observed disparities is complex, and several factors may have an impact on the time interval between curative surgery and AC	Further research is needed to determine if modification of these factors can have beneficial effects on the holistic treatment of CRC patients	Improving survival with faster initiation of AC

(table continues)

Author & Levels of Evidence	Framework	Purpose	Methodology	Results	Conclusions	Implications for future research	Implications for practice
Matsuyama, Kuhn, Molisani, & Wilson-Genderson (2013) LOE: IV	Examined cancer patients' information needs about disease, diagnostic tests, treatments, physical care, and psychosocial resources during treatment	Determine the degree to patients' information needs are satisfied and perceptions of quality of care, quality of life, psychological well-being, and improved health	Longitudinal study with descriptive analyses of an observational study on newly diagnoses African American and non-Hispanic White adults with cancers Stages II – IV who would be receiving treatment	Significant reduction of needs was observed over time. Women, youth, African Americans, and those with less education and were married had higher information needs. Cancer type and stage were not significantly associated	Cancer patients' information needs decrease yet remain high over time. Information needs are highest near diagnosis	As patients obtain and understand information, they will continue to need information in new areas relevant to their care	Education needs of newly diagnoses cancer patients
McMullen (2013) LOE: V	Discuss the role and challenges of the ONN working within an MDT caring for patients with various types of cancers	To define the ONN role	Systematic reviews of published empirical research and critical analysis articles	ONNs need a concrete definition of their role and function as they serve not only the patient but the cancer care system	The role of the ONN has a positive impact on both the patient and the cancer team by providing continuity of care and improved communication	Additional research needs to be completed to demonstrate clinical efficacy across all cancer diagnosis and cost effectiveness metrics of the navigation processes	Determine the role of the ONN
McMurray & Cooper (2017) LOE: VII	The role of the nurse navigator as a step in the evolution of nursing models of care	Potential of the nurse navigator role to be embedded in contemporary models of interdisciplinary health care practice across health settings	Systematic review of literature and opinion of the authorities	The roles of the case manager care coordinator and nurse navigator have considerable overlap, and lacks research into the relative effectiveness of the roles	Suggest to empower nurses of the MDT to reallocate clinical responsibilities for health promotion, coaching, self-care, medication management, and a range of other functions to provide the best and most coordinated care possible	Research evidence will assist to inform service policies, health reforms, and validate the need for smart technologies, as well as linking the nursing role redesign to patient outcomes	Historical development of the patient navigator role

(table continues)

Author & Levels of Evidence	Framework	Purpose	Methodology	Results	Conclusions	Implications for future research	Implications for practice
Miller et al. (2016) LOE: V	The American Cancer Society and the National Cancer Institute collaborating to estimate the number of current and future cancer survivors	Improve service to cancer survivors through the public health community	Cancer prevalence as of January 1, 2016 was estimated using the prevalence and incidence approach model. Incidence and survival were modeled by cancer type, sex, and age group using invasive malignant cases diagnosed from 1975 – 2012 from the Surveillance, Epidemiology, and End Results program. Mortality data for 1975–2012 were obtained from the National Center for Health Statistics	The three most prevalent cancer in 2016 were prostate (3,306,760), colon and rectum (724,690), and melanoma (614,460) among males and breast (3,560,570), uterine corpus (757,190), and colon and rectum (727,350) among females. More than one-half (56%) of survivors were diagnosed within the past 10 years with 21% over the past 20 years	There is continued growth of the cancer survivor population in the United States and patterns of treatment and common side effects across the most prevalent cancers. Despite increasing awareness of survivorship, issues and the resilience of cancer survivors, many challenges remain. To address the challenges, ongoing efforts to identify best practices for the delivery of quality posttreatment cancer care is needed	Future research should focus on identifying the best methods for encouraging cancer survivors to adopt and maintain a healthy lifestyle. Models for the integration of comprehensive care for cancer survivors are starting to emerge	Prevalence of cancer 2016
Nagel & Penner (2016) LOE: V	Conceptual models and frameworks with predominant themes and a comprehensive conceptual model for telehealth nursing practice	Development of a conceptual model to fill a virtual gap in telehealth nursing practice	Systematic review of literature to identify current conceptual models, theoretical frameworks that adopted a broad range of telehealth technologies to holistic nursing practice	Conceptual models highlight components for clinical practice in telehealth, interrelated dimension for nursing practice have been identified that can serve to inform holistic patient-centered care in telehealth	A conceptual model for telehealth model for telehealth nursing practice can illustrate the relationship of concepts inherent to nursing practice and delivery of care using telehealth	Further development, and refinement in support of future research and knowledge generation to inform EBP in telehealth nursing practice	Knowledge gap of telehealth technologies to deliver health care

(table continues)

Author & Levels of Evidence	Framework	Purpose	Methodology	Results	Conclusions	Implications for future research	Implications for practice
Neal et al. (2015) LOE: V	Determine if there is an association between time to diagnosis, treatment, and clinical outcomes, across all cancers	Is increased time to diagnosis and treatment associated with poorer outcomes	Systematic review of the literature and narrative syntheses	Included 177 articles reporting 209 studies that varied. The cancers with more reports of an association between shorter times to diagnosis and more favorable outcomes were breast, colorectal, head and neck, testicular and melanoma	It is reasonable to assume that efforts to expedite the diagnosis of symptomatic cancer are likely to have benefits for patients in terms of improved survival, earlier-stage diagnosis and improved quality of life, although these benefits vary between cancers.	Policy, and clinicians, should continue the current emphasis on expediting symptomatic diagnosis, at least for most cancers and recommend the need for more high-quality research in the association between diagnostic times and outcomes in cancer.	Review of literature on outcomes of more timely cancer diagnosis and time to initiation of treatment
Nilsen (2015) LOE: V	Five categories of theoretical approaches to three overarching aims	Understanding the implementation of theories, models, and frameworks	Theoretical approaches with three overarching aims: describing and/or guiding the process of translating research into practice and/or explaining what influences implementation outcomes, and evaluating implementation	There is overlap between some of the theories, models and frameworks, awareness of the differences is important to facilitate the selection of relevant approaches. Relevance of addressing barriers and enablers to translating research into practice is mentioned in many process models, these models do not identify or systematically structure specific determinants associated with implementation success	Most determinant frameworks provide limited “how-to” support for carrying out implementation endeavors since the determinants usually are too generic to provide sufficient detail for guiding an implementation process	Theorizing about implementation should not be an abstract academic exercise unconnected with the real world of implementation practice.	Identify different categories of theories, models, and frameworks in implementation science

(table continues)

Author & Levels of Evidence	Framework	Purpose	Methodology	Results	Conclusions	Implications for future research	Implications for practice
Paul et al. (2011) LOE: IV	Study to examine cancer patients' concern level at each phase of waiting	Determine cancer patient perceptions of waiting times with diagnosis and treatment journey	Cross-sectional, self-report survey regarding cancer care experiences. Studied patients at each phase of waiting. Demographic, disease and psychosocial characteristics associated with concern at each phase were also assessed	146 outpatients were recruited from two hospitals in Sydney, Australia. A survey assessed concern with waiting times at each treatment phase. Approximately half (52%) reported experiencing concern during at least one treatment phase, while 8.9% reported experiencing concern at every phase	Outpatients' concerns associated with waiting times across almost every care phase from pre-diagnosis to treatment. This provides an endpoint assessment of an important aspect of quality of care.	Further investigations of the factors that underlie these concerns are warranted to understand and intervene in a manner which minimizes distress to this very vulnerable patient group	Effects of wait times on cancer patients
Pillay et al. (2016) LOE: V	A review of literature regarding the impact of MDT meetings	Determine whether MDT meetings impact patient assessment, management, and outcomes	Studies were identified from 1995 to April 2015. Studies were included if they assessed measurable outcomes, and used a comparison group and/or a pre- and post-test design	Between 4% and 45% of patients discussed at MDT meetings experienced changes in diagnostic reports following the meeting. They were more likely to receive better pre-operative staging, and neoadjuvant/adjuvant treatment.	MDT meetings impact upon patient assessment and management practices. However, there was little evidence indicating that MDT meetings resulted in improvements in clinical outcomes	Future research should assess the impact of MDT meetings on patient satisfaction and quality of life, as well as, rates of cross-referral between disciplines	Effects of MDT meetings on patient outcomes

(table continues)

Author & Levels of Evidence	Framework	Purpose	Methodology	Results	Conclusions	Implications for future research	Implications for practice
Pollack & Pollack (2014) LOE: IV	Kotter's eight step process	<u>Describe</u> how to use Kotter's process to manage an organizational change program	Action research was used with Kotter's eight-stage process to guide and structure change management action at an organization with over 10,000 employees and offices worldwide	Kotter's eight-stage process is linear, but for large-scale change the linear sequence may be made up of many small stakeholder groups, suggesting that an effective change team will need the flexibility to be able to work on many stages of change	Kotter's process was found to be an effective way of managing the change	This research has contributed to a needed link between change management theory and practice. More examples are needed to enquire into how others have applied Kotter's Process in practice to learn from others' experience in changing their organizations	Kotter's eight stage process to manage and organizational change
Ramirez et al. (2014) LOE: IV	Culturally-tailored patient navigation intervention model	Determine whether a patient navigator reduces the barriers and disparities for receiving timely cancer care for Hispanic/Latino breast cancer patients	Quasi-experimental design to recruit 480 self-identified Latinas (251 navigated and 229 non-navigated controls) at community-based health clinics in the 6 study sites from January 2008–January 2011	Compared with control patients, a higher percentage of navigated subjects-initiated treatment within 30 days (69.0% versus 46.3%, $P = .029$) and 60 days (97.6% versus 73.1%, $P = .001$) following their cancer diagnosis. Time from cancer diagnosis to first treatment was lower in the navigated group (mean, 22.22 days; median, 23.00 days) than controls (mean, 48.30 days; median, 33.00 days)	Successful application of patient navigation increased the percentage of Latinas initiating breast cancer treatment within 30 and 60 days of diagnosis	The benefits of PN to the barriers faced by low-income underserved minority groups in dealing with cancer remains unclear, there is some evidence that PN works when applied correctly and in a timely fashion to specific clinical challenges	Barriers for breast cancer Hispanic/Latino women, effects of the patient navigator

(table continues)

Author & Levels of Evidence	Framework	Purpose	Methodology	Results	Conclusions	Implications for future research	Implications for practice
Tyser, McFadden, & Preson (2016) LOE: V	Outpatient patient satisfaction survey to measure metrics and variables influencing the probability of survey nonresponse	Effects of non-response bias in the patient satisfaction survey	Reviewed all unique adult patients (16,779) who completed an outpatient encounter in the Department of Orthopedic surgery at our academic institution from 1/1/13 to 10/24/13. Survey data was linked to each clinic visit, and patient factors including age, sex, insurance type, zip code, and orthopedic subspecialty visited were recorded. The overall survey response rate was calculated. Logistic regression was performed, and unadjusted and adjusted odds ratios of patients' probability of responding to the Press-Ganey survey were calculated	Two thousand seven hundred sixty-two (16.5 %) of individuals completed a Press-Ganey patient satisfaction survey and 14017 patients did not respond. For those patients considered responders, 906 patients (32.8 %) did not complete all the survey items. Among these 906 patients, the mean number of missing items was 2.24 (SD = 2.19)	The response rate to the Press-Ganey Medical Practice Survey of outpatient satisfaction is low in an orthopedic outpatient population, and furthermore, is impacted by patient characteristics such as age, sex, insurance type, and type of orthopedic subspecialist encountered. The findings of the present study should inform future non-response weighting procedures in this area	More research is needed to assess non-response bias—including follow-up studies of non-respondents—to more accurately measure of patient satisfaction.	Outpatient patient satisfaction survey and effects of non-response bias

(table continues)

Author & Levels of Evidence	Framework	Purpose	Methodology	Results	Conclusions	Implications for future research	Implications for practice
Wagner et al. (2014) LOE: II	To determine whether a nurse navigator intervention improves quality of life and patient experience with care for people recently given a diagnosis of breast, colorectal, or lung cancer	Does nurse navigator intervention improve quality of life and patient experience for patients with breast, colorectal or lung cancer	Adults with recently diagnosed primary breast, colorectal, or lung cancer ($n = 251$) received either enhanced usual care ($n = 118$) or nurse navigator support for 4 months ($n = 133$) in a two-group cluster randomized, controlled trial with primary care physicians as the units of randomization. Patient-reported measures were collected at baseline, 4 months, and 12 months. Automated administrative data were used to assess time to treatment and total health care costs	There were no significant differences between groups in functional assessment of cancer therapy-general scores. Nurse navigator patients reported significantly higher scores on the patient assessment of chronic illness care scale and reported significantly fewer problems with care, especially psychosocial care, care coordination, and information, as measured by the Picker instrument. Cumulative costs after diagnosis did not differ significantly between groups, but lung cancer costs were \$6,852 less among nurse navigator patients	Compared with enhanced usual care, nurse navigator support for patients with cancer early in their course improves patient experience and reduces problems in care, but did not differentially affect quality of life	Further research will be needed to clarify how well nurse navigation works in more typical, fragmented care systems, and whether it can reduce the costs of cancer care.	Benefits of the nurse navigator to improve quality of life and patient experience

Appendix B: Patient Satisfaction Monitoring

MWRS patient satisfaction

1 – 5 Likert scale

Pre-Telehealth MDC

Was it easy to get an appointment when you wanted?

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Comments:

Rural comparison non-project site Patient Satisfaction

1 – 10 Likert Scale

Easy to get appointment

1	2	3	4	5	6	7	8	9	10
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Post-MDC

Was it easy to get an appointment when you wanted?

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Comments:

Were you comfortable interacting with the specialist via video-conferencing equipment?

1	2	3	4	5
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Appendix C: Staff Debriefing

Open-ended questions to staff and providers after the implementation of the telehealth

MDC

1. What did you like about the telehealth experience?
2. What did you not like about the telehealth experience?
3. What changes would you make to improve the telehealth experience?